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October 27, 2004

John H. Robertus, Executive Director
Executive Officer
San Diego Regional Water Control Board
914 Sky Park Court, Suite 100
San Diego, California 92123-4340

Re: IC: 12-018-02 – Tentative Order No. R9-2004-0378, NPDES Permit No. CA0107239; Scripps Institution of Oceanography, La Jolla

Dear Mr. Robertus:

The University of California San Diego ("UCSD"), Scripps Institution of Oceanography ("Scripps") submits this letter and the enclosed Attachment A and Exhibit 1. Collectively, these documents provide comments, questions and proposals concerning the San Diego Regional Water Quality Control Board ("Regional Board") Tentative Order No. R9-2004-0378 ("Tentative Order") which renews Order No. 99-83, National Pollutant Discharge Elimination System ("NPDES") Permit No. CA0107239, Waste Discharge Requirements ("WDRs") ("Order 99-83") for Scripps.

Introduction

Scripps is a world renowned institution that conducts critically important medical, marine biology and earth science research and education, all of which is dependent on the continued availability of the flow-through seawater system. Scripps agrees with the Regional Board that the Tentative Order contains significant changes from Order 99-83, and that a considerable effort will be required by Scripps to comply with the limitations, studies and reports, prohibitions and provisions in the Tentative Order.

Scripps believes that the enclosed comments and proposed changes to the Tentative Order will protect the beneficial uses in the ASBS, provide enhanced and meaningful monitoring techniques and preserve and enhance the natural water quality as required by the California Ocean Plan ("Ocean Plan")[1]

[1] State Water Resources Control Board "Water Quality Control Plan – Ocean Waters of California" (2001) ("Ocean Plan") at III.I.1.

for the Scripps discharge into the San Diego Marine Life Refuge ("Refuge"), an area of special biological significance ("ASBS").[2]

Background

Scripps has been discharging seawater at its current location since approximately 1910. In 1969, prior to the adoption of the Ocean Plan by the State Water Resources Control Board ("State Board"), the Regional Board first issued a WDR permit to Scripps. In 1972, the Ocean Plan was adopted by the State Board and it required that "waste shall be discharged a sufficient distance from" ASBSs to assure maintenance of natural water quality conditions in those areas. In early 1974, the State Board designated 31 ASBSs, including the San Diego Marine Life Refuge. Later, in 1974, the Regional Board issued Scripps its first combined NPDES/WDR permit in Order No. 74-47. Because the refuge was then designated as an ASBS, the Regional Board made a finding that the Scripps discharge would "not alter the water quality conditions" of the Refuge. (Order No. 74-47)[3] Since 1974, the Regional Board has reissued the NPDES/WDR permit four times, the most recent being 1999. In each instance the Regional Board made a finding that the discharge was not harming the ASBS. Until this year, Scripps has continued to operate its permitted discharge without an exception from the Ocean Plan prohibition of discharges into ASBSs.

The State Board Exception

In November 2002, Scripps was first asked to submit an application for an exception to the Ocean Plan prohibition of discharges into the ASBS. Scripps was also asked to produce limited benthic survey, toxicity data, and effluent copper sampling data as part of that application. The State Board deemed the application completed in late 2003.

The Ocean Plan provides for the preservation and enhancement of ASBSs by prohibiting discharge of waste into these areas. At the same time, the Ocean Plan allows the State Board to grant exceptions to that prohibition where they will not compromise protection of the ocean waters for beneficial uses.[4] On July 22, 2004, the State Board, while satisfying California Environmental Quality Act ("CEQA") requirements, found that the Scripps discharges, both seawater and stormwater, will not compromise protection of the Ocean Waters for beneficial uses, and that the granting of the exception would serve the public interest. The State Board qualified this exception with 19 conditions.[5]

In addition to satisfying the criteria established in the Ocean Plan for the granting of the exception, the State Board was encouraged that Scripps might be able to develop a unique monitoring program to better assess the Refuge's dynamic coastal environment. The monitoring program would provide improved tools or systems to measure the immediate and long term effects of the discharge into the ASBS, and in the process provide a model for other ASBS monitoring programs. See "Comments Re: 'Tentative Monitoring and Reporting Program No. R9-2004-0378' California Regional Water Quality Control Board" by Linda Rasmussen, Ph.D., and Ed Parnell, Ph.D., enclosed herewith as Exhibit

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2 Pursuant to the 2000 amendments to the State Marine Manage Area Improvement Act as contained in Public Resources Code ("PRC") Section 36700, Scripps understands that ASBS's are now called State Water Quality Protection Areas ("SWQPAs"). For purposes of this comment letter, all references to the Refuge ASBS include SWQPA issues.

3 At that time, the Regional Board incorrectly identified the ASBS as The La Jolla-San Diego Ecological Reserve ("Reserve"), when in fact the discharge flowed into the San Diego Marine Life Refuge.

4 Ocean Plan at III.I.1.a.

5 State Water Resources Control Board Resolution No. 2004-0052. (July 22, 2004).

1 to Attachment A. In this comment these two Scripps scientists offer some general recommendations for making the permit monitoring program more powerful and therefore more effective. The scientists' comments represent preliminary scientific assessments. They are not commitments for action at this stage on the part of Scripps nor should they be included in the Tentative Order. They do represent the type of expertise that Scripps can bring to these issues and demonstrate our willingness to work in partnership with the State and Regional Boards to enhance the quality of monitoring programs. In granting the exception to Scripps, the State Board believes that the ASBS would be preserved and enhanced, that the natural water quality conditions would not be altered, and that a template for others who discharge into ASBSs would be established.

The Tentative Order Process

In the State Board process the 19 conditions were developed as a framework for the exception, with the implementation of these conditions left to the Regional Board to work out in the permit reissuance. Unfortunately, due to CEQA document decisions the State Board hearing on the exception was delayed several months and the final exception document was not published until August of this year. The first meeting with the Regional Board staff after the State Board granted the exception was in August, and the first meeting with the Regional Board permit writer was on September 16, 2004. The Tentative Order was published on October 8, 2004, and comments are due October 27, 2007. Scripps appreciates its working relationship with both the State Board and the Regional Board staffs as both have been cooperative and helpful. However, the amount of time available for the parties to meet and confer concerning the Tentative Order has been limited. We are hopeful that the remaining questions and concerns contained in this submittal will be resolved prior to the Regional Board's November 10 meeting.

Scripps Comments on the Tentative Order

To facilitate that process, this letter provides an overview and highlights the need for interim effluent limits prior to the imposition of the final permit limits. The State Board contemplated a number of planning and assessment actions that Scripps must undertake in order to characterize its effluent, the receiving water, the sediment and the biological community. In addition Scripps must develop a storm water management plan and a feasibility study of alternatives for treatment, diversion, source reduction, relocation or elimination of the discharge. Finally, and perhaps most significantly the discharge must not alter the natural water quality conditions of the receiving water in the ASBS, but "natural water quality" will not be defined for a year or more when a select advisory committee convenes to review relevant (and yet to be gathered) data.

Because the 19 conditions of the exception are to become part of the reissued permit the documents attached to this letter provide specific questions, comments and concerns regarding the Tentative Order, the Fact Sheet and the Mitigation and Monitoring Program ("MMP").

The Tentative Order includes effluent limits for water quality objectives listed in Table B. The chemical concentrations for the effluents have a dilution factor of 2:1 for both the seawater and the seawater mixed with stormwater discharges. These discharges must comply with Table B water quality objectives at the discharge point (i.e., the end of the Outfall). At the same time it should be noted that the historic Scripps' permits required limited monitoring, e.g., at Outfall 001 (only 7 constituents were monitored), and at Outfalls 002 and 003 (only 5 constituents were monitored) and there was no receiving water quality monitoring required. Thus, to date there is no Scripps effluent data for the vast

majority of Table B objectives and none for the receiving water. Scripps simply does not know if it will or if it can immediately achieve compliance with all the Table B objectives as of November 20[6], and Scripps is not comfortable about this uncertainty and the concomitant mandatory minimum penalties that could apply to any exceedances. To address this concern, Scripps requests that the Regional Board not impose Table B effluent limits immediately but rather that it continue the existing permit limits and at the same time employ the reasonable potential analysis provisions as set out in the proposed 2004 amendment to Chapter III of the Ocean Plan[7], that it develop interim effluent limits, while setting a date for the final Table A and Table B effluent limits to become effective.

Because Scripps is not a new discharge and since Scripps has never been asked to assess or determine its compliance with the Table B effluent standards now being imposed on it for the first time, it is not appropriate to impose final Table B water quality objectives without the opportunity to develop information and systems to achieve final permit limits.

Condition 14 of the exception and the Tentative Order require that Scripps develop dry and wet weather effluent data. Until this effluent data is developed and sufficient data has been provided to and reviewed by the permit writer, interim effluent limits can be developed and these interim limits should apply for a specified time within which Scripps must achieve compliance with the final Ocean Plan Table B limits.

Finding 12 of the Tentative Order recognizes that an advisory committee must be established to define "natural water quality conditions." The fact that Scripps is proscribed from altering natural water quality conditions, when such conditions have not yet been defined demonstrates the need for a period of time to determine what the natural conditions are and to come into compliance with this requirement.

Page 13, Condition 3.b., requires that within six months of the adoption of the Order, Scripps must submit a report evaluating alternatives and associated cost and the feasibility of such alternatives, to the current seawater discharge system. Scripps recently was advised by the City of San Diego Metropolitan Wastewater Department that it will not be able to divert treated seawater to the City due to a lack of carrying capacity in the relevant City pipes. Thus, what would have been a plumbing and hookup costs issue, is now a treatment technology and cost issue. The feasibility solution will require additional time before a preferred alternative is identified, funded and implemented.

Conditions 3.q., Initial Dilution, Fate and Transport Study; Condition 3.l., Bioaccumulation Study; and, Condition 3.k, the Benthic Study, all must be completed after of the adoption of the order. These studies are in addition to the development of the definition of "natural" water quality limit compliance. All of these requirements demonstrate that Scripps needs time to develop data and to assure that it is in compliance with final effluent limits.

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[6] Attachment B to the Tentative Order; Standard Provisions, Section 15 provides that the order shall become effective ten days after the date of its adoption provided the USEPA Regional Administrator has no objection.

[7] While not applicable here, the State Board in the State Implementation Plan for the California Toxic Rule provides for the issuance of information request to develop data in order to calculate water quality-based effluent limitations. The information request is to specify a time schedule for providing the data to the Regional Board, not to exceed three years from the effective date of the Policy. If an NPDS permit is reissued prior to completing the requirements, the schedule shall be included in the Permit with "interim effluent limits" being included prior to the imposition of final effluent limits being imposed.

Conclusion

Scripps understands that the State Board conditioned its exception on "compliance" with its NPDES permit[8] and Scripps will be exposed to breaching that condition unless it is granted phased effluent limits in the reissued permit.[9]

And, by providing Scripps time to develop data, assess impacts, to identify feasible compliance alternatives and costs, and to achieve final effluent limits, the Regional Board will still meet its obligation to include the 19 conditions in the re-issued permit.

Scripps looks forward to working with the Regional Board to develop the requisite monitoring programs and to continued compliance. As a University of California system member, Scripps does have significant financial constraints and would appreciate any financial partnerships or other guidance that the Regional Board and the State Board can provide regarding grants or other funding sources.

Scripps will appear at the Regional Board Hearing on November 10 to make a presentation and to answer questions. We request that the Chair reserve 30 minutes for the Scripps presentation, we will defer that time if it is not necessary to make a full presentation. If you have any questions concerning this letter or its enclosures, please feel free to contact Ms. Kimberly O'Connell at (858) 534-6018, or me.

Very truly yours,

Tom Collins
Deputy Director, Administrative Affairs
Scripps Institution of Oceanography

Attachment A: Scripps Comments
Exhibit 1: Monitoring Program Comments
cc: Paul J. Richter

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[8] State Board Resolution No. 2004-0052, Resolution 3.

[9] The proposed amendment to Chapter III.C to the 2001 Ocean Plan provides where there is insufficient information then the Regional Board shall require additional pollutant-specific monitoring as a condition of the WDRs. That is exactly what the 19 conditions do.

ATTACHMENT A: UNIVERSITY OF CALIFORNIA, SAN DIEGO, SCRIPPS INSTITUTION OF OCEANOGRAPHY'S COMMENTS ON TENTATIVE ORDER NO. R9-2004-0378, NPDES PERMIT NO. CA0107239; RENEWAL OF WASTE DISCHARGE REQUIREMENTS FOR ORDER NO. 99.83

#	Page	Paragraph / Section	Comment
Fact Sheet for Tentative Order No. R9-2004-0378			
1	1	Facility Description	Based on measurement data obtained from intake flow meters installed in September 2004 on the intake pumps, the measured intake flow rate is greater than the rated capacity stamped on the pumps. The rated capacity and pump run time used to estimate the discharge flow therefore underestimated the actual discharge flow. The corrected maximum seawater discharge is **1.25** million gallons per day (mgd) of seawater.
2	1	Facility Description	The seawater discharge to Outfall 002 was eliminated in September 2004.
3	2	Facility Description	Based on data obtained from outfall flow meters installed on Outfalls 1, 3, and 4b in September 2004, the seawater discharge flow estimates should be revised as follows: Outfall 001: Average daily discharge = 470,000 gpd; maximum discharge = 700,000 gpd Outfall 002: The seawater discharge to Outfall 002 was eliminated in September 2004. Outfall 003: Average daily discharge when the Ring Tank is in use = 280,000 gpd; maximum discharge when Ring Tank is in use = 410,000 gpd Outfall 004: Average daily discharge = 45,000 gpd; maximum discharge = 140,000 gpd
4	2	Basis for Tentative WDR	Scripps applied for an exception to the California Ocean Plan in November 2002.
5	4	Condition 2	Please see comments in cover letter. Scripps requests that current permit limits be used until data is

			developed to allow for "interim limits." New permit limits would apply after alternative treatments are in place.
6	5	Condition 12	Bioaccumulation Study. Scripps recommends that the bean clam Donax guildi be used as an alternative organism to Emerita (sand crab) because it is likely to be more homogeneously distributed throughout the ASBS and adjacent sandy beaches. A pilot study is needed to determine that the species chosen for the bioaccumulation study have adequate spatial coverage for this particular application. If they are not distributed far enough outside the ASBS, then adequate controls will not be available rendering data interpretation impossible. Juvenile mussels can be out-planted outside the surfzone on specially constructed modules that can be situated as part of a spatial monitoring grid. It would not be possible to deploy these modules in the surf zone because they would be dislodged by the surf. The only hard substrate already available in the ASBS is Dyke Rock well to the north of the discharges and the pier. These locations are not useful within a spatial assessment scheme but would be useful for time series.
7	6	Condition 14	Please see comments in cover letter. Scripps requests that current permit limits be used until data is developed to allow for "interim limits." New permit limits would apply after alternative treatments are in place.
8	6	Condition 15	Scripps requests that the receiving water samples be collected at the established sampling station located near the end of the pier for safety and logistical reasons (protected during a storm event). This location is seaward of the surf zone. In addition, UCSD requests that the receiving water samples consist of 4 grab samples collected during a 24 hour period rather than a 24-hour composite sample so results can be compared to ocean conditions (e.g., current direction, tides) at the time the sample was collected. Based on recent discussions with the SWRCB, it is our understanding that the sediment sample would consist of a grab sample of the surface sediment. If this is correct, the requirements for composite samples in Tables 1-4 need to be modified to indicate a grab sample for the sediment analyses. The Ocean plan does not have standards for sediments. What is the standard that the results will be compared to? How will this data be used? For example, will this data to be used for determining natural water quality?
9	6	Condition 16	The SIO SWMP will be developed and submitted to the Regional Board 6 months after the NPDES permit is issued. The SWMP is a comprehensive plan which will facilitate any BMP decisions, thus,

			Scripps requests that it first be given six months to develop the SWMP before any 30-day report is due. This condition can not be implemented until the SIO SWMP has been developed.
10	7	NPDES Rating	The maximum seawater discharge flow rates for SIO should be revised to **1.25 mgd** as presented in the first comment in this table.
Tentative Order No. R9-2004-0378			
11	1	Finding 2	The maximum seawater discharge flow rates for SIO should be revised to **1.25 mgd** as presented in the first comment in this table.
12	1	Finding 7	The maximum seawater discharge flow rate for SIO should be revised to reflect **1.25 mgd**. In addition, the seawater discharge from Outfall 002 has been eliminated.
13	2	Finding 9	Based on flow meter data obtained since meters were installed on Outfalls 1, 3, and 4b in September 2004, the seawater discharges from each of the Outfalls should be revised as follows: • Outfall 001: Discharges an average of approximately 470,000 gpd with a maximum of 700,000 gpd • Outfall 002: The seawater discharge from Outfall 002 has been eliminated. • Outfall 003: Discharges an average of approximately 140,000 gpd with a maximum of 200,000 gpd of waste seawater from the Experimental Aquarium and an additional average of approximately 140,000 gpd with a maximum of 210,000 gpd from the Ring Tank Complex when it is in use. • Outfall 004a & 004b: Discharges an average of approximately 45,000 gpd with a maximum of 140,000 gpd
14	3	Finding 13	In the findings of the existing permit, it was noted that copper concentrations in the intake water has been known to exceed limits. This might also be true for other constituents of Tables 1-4. Scripps appreciates that the Ocean Plan effluent limits shall be gross, not net. However, as with Finding 12 in Order 99-83,a provision should be added indicating that prior to considering enforcement action for violations of any effluent limitations (not just copper), the Regional Board will consider the source of the constituent in the effluent and the ambient water quality conditions that might have contributed to the elevated concentrations.

<table>
<tr><td>15</td><td>6</td><td>Prohibition 6</td><td>Based on measurement data obtained from intake flow meters installed in September 2004 on the intake pumps, the measured intake flow rate is greater than the rated capacity stamped on the pumps. The rated capacity and pump run time used to estimate the discharge flow therefore underestimated the actual discharge flow. The corrected maximum seawater discharge is 1.25 mgd of seawater. The prohibition should be revised to reflect that a discharge of seawater volume in excess of 1.25 mgd is prohibited rather than 1.008 mgd.
In addition, please include language indicating that this limit does not apply during wet weather conditions.</td></tr>
<tr><td>16</td><td>6</td><td>Special Conditions, #1</td><td>Ocean Plan Appendix II Minimum Levels are higher than the effluent limits in the draft NPDES permit Tables 1-4 for the constituents listed in Table A below. According to the Ocean Plan, minimum levels are to be established in such cases.
<table>
<tr><td colspan="4">Table A</td></tr>
<tr><th>C. Special Conditions Table No.</th><th>Constituent</th><th>Ocean Plan Appendix II Minimum Levels (ug/L)</th><th>Lowest Permit Effluent Limitations (ug/L)</th></tr>
<tr><td>1</td><td>Endosulfan</td><td>0.010 to 0.050</td><td>0.0270</td></tr>
<tr><td>1</td><td>Endrin</td><td>0.010</td><td>0.0060</td></tr>
<tr><td>1</td><td>HCH</td><td>0.005 to 0.020</td><td>0.0120</td></tr>
<tr><td>1</td><td>Mercury (Hg)</td><td>0.500</td><td>0.2390</td></tr>
<tr><td>3</td><td>1,2-Diphenylhydrazine</td><td>1.000</td><td>0.4800</td></tr>
<tr><td>3</td><td>2,4,6-Trichlorophenol</td><td>10.000</td><td>0.8700</td></tr>
<tr><td>3</td><td>3,3'-Dichlorobenzidine</td><td>5.000</td><td>0.0243</td></tr>
<tr><td>3</td><td>Acrylonitrile</td><td>2.000</td><td>0.3000</td></tr>
<tr><td>3</td><td>Aldrin</td><td>0.005</td><td>0.0001</td></tr>
<tr><td>3</td><td>Benzidine</td><td>5.000</td><td>0.0002</td></tr>
<tr><td>3</td><td>Beryllium (Be)</td><td>0.500</td><td>0.0990</td></tr>
<tr><td>3</td><td>bis(2-Chloroethyl)ether</td><td>1.000</td><td>0.1350</td></tr>
<tr><td>3</td><td>Chlordane</td><td>0.100</td><td>0.000069</td></tr>
<tr><td>3</td><td>DDT</td><td>0.010 to 0.050</td><td>0.00051</td></tr>
<tr><td>3</td><td>Dieldrin</td><td>0.010</td><td>0.0001</td></tr>
</table></td></tr>
</table>

			3 | Heptachlor | 0.010 | 0.00015 3 | Hexachlorobenzene | 1.000 | 0.00063 3 | N-Nitrosodi-n-propylamine | 5.000 | 1.1400 3 | PAHs | 0.050 to 5.00 | 0.0264 3 | PCBs | 0.500 | 0.000057 3 | Toxaphene | 0.500 | 0.0006 In addition, based on recent discussions with a marine analytical laboratory, it appears that the reporting limits for some of the constituents may also be greater than the effluent limitations. It appears that the reporting limits for Acrylonitrile and Chromium (hexavalent) are higher than draft NPDES permit effluent limits and Appendix II Minimum Levels. It also appears that the reporting limits for Total Chlorine Residual and Cyanide are higher than draft NPDES permit effluent limits and there are no established Appendix II Minimum Levels. UCSD requests that the Board staff meet to establish minimum levels for the constituents mentioned in Table A above. In draft NPDES permit Table 2, the Monthly Average limitations for 2,4-dinitrophenol and fluoranthene do not appear to be calculated in the same manner as the other constituents and by our calculation should be 12 and 45 ug/L, respectively, to be consistent.
17	6	Special Conditions, #1	Outfall 002 should not contain mass loading limits as it no longer contains seawater mixed with stormwater.
18	6	Special Conditions, #1	Scripps request guidance from the Regional Board concerning where and what in the Scripps' system is the "influent" stream? How does Scripps demonstrate compliance with the 75% removal of suspended solids? How does it demonstrate 75% removal during a storm event?
19	8	Table 1	Radioactive materials are not added to the sea water discharge. The limits for radioactivity refer to CCR Title 17, which in turn refers to 10 CFR 20. Table 2 in 10 CFR 20 lists effluent limits typically derived for sewage and industrial discharges with relatively low background activity. For effluent mixtures with an unknown composition of nuclides, the most common way to show compliance is to do a gross

			analysis of total activity. Another way to comply is to analyze for each nuclide and assess compliance with each respective effluent limit. The limits for an unknown mixture are set much lower than those for known isotopes. The limit for an unknown mixture has been set at 2E-9 uCi/ml. A report from the National Academy of Sciences, Radioactivity in the Marine Environment, 1971, Concentrations of Natural Radionuclides in the Sea, Page 8-9, reports the total activity for sea water as 4.49E-7 uCi/ml, which is greater than the limit for an unknown effluent mixture. To analyze each nuclide distinctly is difficult to do in a sea water matrix and will cost $1500 to $2,000 per sample. It costs about $200 per sample to do gross activity analysis. There are no radioactive materials added to the sea water discharge. Nuclides commonly used at UCSD are beta emitters C-14, H-3, P-32, and S-35. We propose to analyze for gross beta activity and attribute all of the activity to C-14, which has the lowest limit in Table 2 of 10 CFR 20 for the common constituents used at UCSD. By meeting the C-14 limit, the limits for each of the commonly used nuclides would be met.
20	12	2. Bacterial Characteristics	Delete reference to kelp beds, kelp beds are not located 1,000 feet from the shoreline or at the 30-foot depth contour at SIO. The nearest kelp bed is approximately 2 kilometers away.
21	13	Condition 2 (b)	In the second line, change the word "for" following 100ml to "nor."
22	14	3. Reports and Studies, (f)	Scripps recommends that the bean clam Donax guildi or a worm be used as an alternative organism to Emerita (sand crab) because it is likely to be more homogeneously distributed throughout the ASBS and adjacent sandy beaches. A pilot study is needed to determine that the species chosen for the bioaccumulation study have adequate spatial coverage for this particular application. If they are not distributed far enough outside the ASBS, then adequate controls will not be available rendering data interpretation impossible. Juvenile mussels can be out-planted outside the surfzone on specially constructed modules that can be situated as part of a spatial monitoring grid. It would not be possible to deploy these modules in the surf zone because they would be dislodged by the surf. The only hard substrate already available in the ASBS is Dyke Rock well to the north of the discharges and the pier. These locations are not useful within a spatial assessment scheme but would be useful for time series.

			Uptake of contaminants can occur as quickly as six weeks for mussels, therefore, mussels should be deployed at least seasonally and left out for ~2 months. Contaminant turnover rates for Emerita and Donax are not known, meaning that interpretation of these data will be more problematic unless a pilot study of contaminant turnover rates is conducted beforehand.
23	14	3. Reports and Studies, (g)	The SIO SWMP will be developed and submitted to the Regional Board 6 months after the NPDES permit is issued. The SWMP is a comprehensive plan which will facilitate any BMP decisions, thus, Scripps requests that it first be given six months to develop the SWMP before any 30-day report is due. Further, natural water quality has yet to be defined and thus it is not possible to know what the natural water quality is during a storm event or whether the Scripps discharge caused or contributed to an alteration of natural water quality. Condition 3.(g) can not be implemented until the SIO SWMP has been developed.
24	14	3 (d) (x)	Condition 3.d.x should provide for both a description of a reduction in volume and/or a reduction in pollutants.
25	17	Condition E	Provisions paragraph 10 provides that the permit may be modified or revoked if the Regional Board determines that the continued discharge may cause unreasonable degradation of the marine environment. Should this be changed to read "unreasonable alteration of natural water quality conditions"?
Tentative Monitoring and Reporting Program No. R9-2004-0378			
26	1	A2	The reference in subsection d, "NPDES Compliance Sampling Manual," U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, is not listed in publications available from NIST, NTIS, GSA, GPO or EPA. Has this reference been updated with a different title?
27	3, 4	B1	Seawater discharge from Outfall 002 has been eliminated, Outfall 002 should be deleted from this section.
28	3	B1	The condition states that the monitoring shall be conducted at the discharge point to the beach. To facilitate monitoring, Scripps would like to add "or from the discharge pipe downstream from where the last effluent flow joins the discharge pipe" so monitoring stations and associated equipment can be installed off of the beach.

29	3	B1	Scripps is concerned that requiring outfall effluent monitoring during a storm water discharge could be dangerous, especially during extreme tides and storm events. Scripps recommends that the requirement to monitor during storm water discharges be qualified to those times when the discharger judges it to be safe to conduct such monitoring.
30	6 and 7	Tables 2 and 3	The Monthly Average limitations for 2,4-dinitrophenol and fluoranthene do not appear to be calculated in the same manner as the other constituents and by our calculation should be 12 and 45 ug/L, respectively, to be consistent. To preserve the integrity of the volatile organic samples, UCSD requests that a single grab sample be collected for the following volatile organics in lieu of the 24 hr. composite at each Outfall: • Acrolein • Chlorobenzene • Ethylbenzene • Toluene • 1,1,1-trichloroethane • chloroform • 1,2-dichloroethane • 1,1-dichloroethylene • dichloromethane • 1,1,2,2-tetrachloroethane • tetrachlororethylene • trichloroethylene • 1,1,2-trichloroethane • vinyl chloride
31	10	B2	States "When in use, Outfall 3, shall be sampled …" Outfall 3 is always in use because it receives seawater discharge from the Experimental Aquarium. The

			requirement for sampling Outfall 3 for bacteria in the exception conditions was to apply when mammals are present in the ring tank complex. This condition should be revised to read, "When the Ring Tank is in use, Outfall 003 shall be sampled….." The Ocean Plan limits for bacteria refer to the receiving water. What will outfall discharge bacterial results be compared to?
32	10	B2	The industrial discharge from Outfall 002 has been eliminated, the twice a year composite shall therefore include Outfalls 003, 004a, and 004b.
33	10	C1	Scripps requests that the receiving water samples consist of 4 grab samples collected during a 24 hour period rather than a 24-hour composite sample so results can be compared to ocean conditions (e.g., current direction, tides) at the time the sample was collected.
34	11	C2	Tables 1-4 have specific analyses specified in 40CFR136 for water analyses. What analysis methods are to be used for the sediment? For example, the analyses in Table 4 would not apply to sediment. Based on recent discussions with the SWRCB, it is our understanding that the sediment sample would consist of a grab sample of the surface sediment. If this is correct, the requirements for composite samples in Tables 1-4 need to be modified to indicate a grab sample for the sediment analyses. The Ocean plan does not have standards for sediments. What is the standard that the results will be compared to? How will this data be used? For example, will this data to be used for determining natural water quality? Scripps recommends coupling the sediment monitoring program with the benthic marine life survey. The samples for both programs could be collected simultaneously so that sediment, organic, and contaminant compositions of the sediment are known as well as the composition of the infaunal (burrowing) community for all samples. Contaminant and organic composition is closely linked to grain size composition of the sediments which in turn define the habitat for the infaunal community. Scripps recommends that the concentrations of sediment contaminants be compared to concentrations throughout the entire Southern California Bight to determine relative contamination of ASBS sediments to the range of sediments over the scale of the Bight. This is typical of most municipal discharge

			monitoring programs and would be a useful gauge of relative contamination within the ASBS.
35	12	C3	See Exhibit 1. Letter from Linda Rasmussen, Ph.D., Ed Parnell, Ph.D., Scripps Institution of Oceanography regarding the bacterial monitoring program. In lieu of the bacterial monitoring program proposed in the draft permit, UCSD recommends the following monitoring program: • SIO use the data collected by the County during their regular bacterial monitoring conducted at SIO pier and El Paseo Grande (approximately the same locations as suggested stations S3 and S1) and collect these same two samples during the months that the County does not conduct this monitoring (year-round coverage). The resources saved could be used to investigate the patterns of bacterial activity in a more thorough manner as described below. • SIO analyze for bacteria twice a year (dry weather and wet weather) when analyzing samples collected from Outfalls 1, 3, 4a, and 4b, and the receiving water as described in the TO (Tables 1-4). Once every permit cycle, SIO will conduct an intensive bacterial study during three separate time periods (dry weather, wet weather, and when mammals are present in the Ring Tank). Each study would consist of 3 intensive 3-5 day sampling periods. Several daily samples could be taken from outfall discharges, beach sediments, the surfzone (S1-S5), and nearshore (N1-N5), including at least one station outside the zone of influence of the outfalls. This type of study, conducted once per permit cycle, would provide more information on potential risks, sources, and variability than weekly or monthly samples that cannot resolve natural or human-induced patterns. It would also help inform the design of future monitoring to best fit the conditions of this area. If frequent exceedances are found that appear to be connected to SIO discharges, then DNA analysis could be performed as well to help determine what the host sources are (e.g., sea birds, marine mammals, human sewage, etc.).
36	12	C. 3	The Ocean Plan limits for bacteria refer to the receiving water. What will effluent bacterial results be compared to?
37	13	Table 5	Report due date for the semi-annual report for "January through June" should be changed to August 1.

38	13	Section D	Second paragraph: remove Outfall 002 from the daily flow requirements because the industrial discharge to this outfall has been eliminated.
39	14	Endnote Reference 2	To preserve the integrity of the volatile organic samples, UCSD requests that a single grab sample be collected for the following volatile organics in lieu of the 24 hr. composite at each Outfall: • Acrolein • Chlorobenzene • Ethylbenzene • Toluene • 1,1,1-trichloroethane • chloroform • 1,2-dichloroethane • 1,1-dichloroethylene • dichloromethane • 1,1,2,2-tetrachloroethane • tetrachlororethylene • trichloroethylene • 1,1,2-trichloroethane • vinyl chloride

Comments Re: "Tentative Monitoring and Reporting Program No. R9-2004-0378"
California Regional Water Quality Control Board

Linda Rasmussen, Ph.D., Ed Parnell, Ph.D.
Scripps Institution of Oceanography

The following comments pertain to the "Monitoring and Reporting Program No. R9-2004-0378" of the California Regional Water Quality Control Board. The intent of the proposed monitoring program is to gauge compliance of discharges emanating from Scripps Institution of Oceanography to an exception of the 2001 California Ocean Plan for discharge into an Area of Special Biological Significance. Here, we evaluate some components of the proposed monitoring program – those components for which we have some expertise - and offer some general recommendations for making the monitoring program more powerful and therefore effective. These comments are intended as suggestions, not commitments from Scripps Institution of Oceanography.

The intent of most compliance monitoring programs is to gauge the nature of the discharge and its effects on the receiving waters against a well-defined set of standards. While simply put, the latter task is very complex given the extremely dynamic nature of the receiving waters, the sediments below the receiving waters, and the ecological communities of the receiving waters. Here, we focus on two critical weaknesses we commonly observe in many monitoring programs and which appear to be inherent in the proposed monitoring program. First, the temporal and spatial scales of sampling and/or observation are not powerful enough to detect an impact. In a statistical sense, power is a measure of the ability to correctly detect an effect if there is one. Increasing power can be achieved by increasing the number of samples or observations which substantially increases the costs of monitoring programs. However, we argue that a well-designed spatio-temporal monitoring program can increase power without substantially increasing the cost. A second major weakness is that, aside from an obvious spatial relationship to a known source, which is rarely the case for all but the most grossly polluting discharges, the source responsible for an observed exceedance is unknowable in most monitoring schemes. For example, an exceedance of total coliform counts off Scripps observed in the proposed monitoring project could not be definitively attributed to Scripps because no data are collected up or down coast to preclude possible contamination from remote sources.

Since early surveys of the adjacent ASBS in 1979-1980, the California State Water Resources Control Board has strongly recommended the establishment of a regular sampling program to monitor ecological and environmental change in this protected area. We feel that the monitoring requirements for the Ocean Plan exception and NPDES permit offer a unique opportunity for all interested parties to collaborate on creating a monitoring scheme that is both sensitive to regulatory concerns as well as meaningful in providing information about the long-term health of the marine ecosystem and recreational areas.

Programs in California such as PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans), CRANE (Cooperative Research and Assessment of Nearshore Ecosystems), the Marine Life Management Act, Marine Life Protection Act, and others, all recognize the importance of monitoring and regulating marine protected areas with an ecosystems based approach, as opposed to one that monitors individual species in isolation. The presence of the San Diego Marine Life Refuge ASBS on the shore of SIO is ideal for developing a water quality monitoring system with a similar approach. While measurements of individual constituents may provide some information on the status of water, sediment, and biota at a given point in time, a broader approach is needed to help accurately determine sources of contamination, effects of contamination, and changes occurring over a variety of time scales.

The reviewers have recently completed studies of monitoring programs for the Point Loma Ocean Outfall (City of San Diego) and South Bay Ocean Outfall (EPA) and although the discharges are of a different nature (e.g., sewage vs. storm and aquaria water) many of the recommendations in these studies are applicable to monitoring programs that must deal with point source and non-point source discharges. Some of the general recommendations include:

- Combine regulatory and health monitoring efforts with those already conducted by other local agencies
- Include resources for analysis as well as collection of data
- Design sampling strategies that provide scientifically valuable data while fulfilling regulatory requirements
- Provide information about adjacent areas as a baseline for ecological or environmental impact
- Minimize costs associated with compliance-only monitoring in order to free resources for more scientifically useful monitoring

Specific comments and suggestions for the monitoring program recommended in the Tentative Order are discussed below.

1. BACTERIAL MONITORING

A large percentage of the monitoring budget as outlined in the Tentative Order would be devoted to bacterial monitoring for the outfalls, surfzone, and nearshore stations. Because this would be the largest allocation of time and funds, we would like to see this effort obtain data that is as useful as possible for protecting the environment and public health. A common design problem in bacterial monitoring schemes is that it is not economically feasible to collect data with great enough spatial or temporal resolution to make it useful for a) warning the public, or b) determining the actual source of the contamination. Weekly sampling can only detect contamination persistent enough to last that long, or contamination that is not persistent but happens to coincide with the sampling time; further, one cannot determine which is the case at hand.

The Tentative Order describes the purpose of the bacterial sampling to be the monitoring of health conditions in body contact areas (bathing, surfing, diving), and where kelp or shellfish are harvested, plus for aesthetic reasons (picnicking, boating, etc.) The major concern for the SIO outfall discharge is from Outfall 3 which drains the marine mammal holding facility during 3-4 months of the year. A summary of the monitoring proposed in the Tentative Order (TO) is given below for each area, along with our comments and suggestions.

Surfzone Sampling: The TO lists 5 surfzone stations to be sampled weekly. Two of these sites, at the pier (near Outfall 3) and at the south end of the SIO beach (near El Paseo Grande) are routinely sampled as part of the San Diego County Department of Environmental Health weekly beach monitoring program. It is questionable whether 5 sampling locations over a 2000 ft stretch of beach with one intermittent discharge of marine mammal facility water is a wise use of resources when previous monitoring of this area by the county has not shown it to be a high risk location. The only SIO source of bacterial loading is the marine mammal facility which is in use only 3-4 months per year, during the county's regular sampling season. During the past two years Scripps beach has only been posted once (as an advisory) aside from county-wide advisories due to rain events; the single closure in 2003 was the result of local sewage pipe overflow.

Because bacterial levels can vary hourly, daily, weekly, or by season, a more informative use of resources would be to conduct more extensive sampling during discrete time periods to determine likely patterns of bacterial activity, and whether or not there is a connection to the discharge from Outfall 3 as described in the Alternative Bacterial Monitoring Program.

Nearshore Sampling: Monthly sampling at five 1000'/30m depth stations will achieve little or nothing to protect the health of divers or swimmers. Neither will it provide a data set that will be useful in determining bacterial sources if exceedances are found. Including these nearshore samples in an intensive study would be a more useful allocation of resources.

Outfall Sampling:
Outfall 1: Sample for TOT, FEC and ENT twice annually (wet and dry)
Outfalls 2-4 composite: Sample for TOT, FEC and ENT twice annually (wet and dry)
Outfall 3: Sample for TOT, FEC and ENT monthly when in use.

These "spot" samples could be useful in determining levels of Table A and B constituents for estimating mass loading (in combination with flow volume measurements from the outfalls). However, bacteria levels are typically quite variable and statistics from a more intensive time-series measurement such as that outlined below would give more useful information.

Alternative Bacterial Monitoring Program:

As an alternative to a regimen of separate weekly, monthly or spot sampling described in the TO, we propose the following bacterial monitoring program be implemented instead:

- SIO use the data collected by the County during their regular bacterial monitoring conducted at SIO pier and El Paseo Grande (approximately the same locations as suggested stations S3 and S1) and collect these same two samples during the months that the County does not conduct this monitoring (year-round coverage). The resources saved could be used to investigate the patterns of bacterial activity in a more thorough manner as described below.

- Analyze for bacteria twice a year (dry weather and wet weather) when analyzing samples collected from Outfalls 1, 3, 4a, and 4b, and the receiving water as described in the TO (Tables 1-4).

- Once every permit cycle, conduct an intensive bacterial study during three separate time periods (dry weather, wet weather, and when mammals are present in the Ring Tank). Each study would consist of 3 intensive 3-5 day sampling periods. Several daily samples could be taken from outfall discharges, beach sediments, the surfzone (S1-S5), and nearshore (N1-N5), including at least one station outside the zone of influence of the outfalls. This type of study, conducted once per permit cycle, would provide more information on potential risks, sources, and variability than weekly or monthly samples that cannot resolve natural or human-induced patterns. It would also help inform the design of future monitoring to best fit the conditions of this area.

  If frequent exceedances are found that appear to be connected to SIO discharges, then DNA analysis could be performed as well to help determine what the host sources are (e.g., sea birds, marine mammals, human sewage, etc.).

Sediment Bacteria

Recent studies such as those completed at Mission Bay and Bodega Harbor indicate that FIB that has incubated in sediments can be a major source of high level counts when sampling. The source of this bacteria may be from sewage, marine mammals, or birds, and in the two studies above, the latter source was dominant. Although the energetic surf (especially during high tides) should prevent this from becoming a problem at SIO to some degree, we recommend that in addition to surfzone and nearshore sampling, some sediment sampling be conducted as part of the monitoring program. This could be a part of the intensive multi-day sampling outlined above. The concern is that bacteria introduced into the sediment through outfall discharge, longshore transport, or local bird life may persist and itself become a source of contamination to the surfzone. FIB testing of sediment adjacent to the surfzone stations 1-2 times per day during the study would provide information on bacterial content of the sediment and whether it is from birds, marine mammals, or sewage.

2. NON-POINT SOURCE POLLUTION

We are concerned about the impact of non-point source pollution from the existing storm drainage system and runoff, and how it will be possible to distinguish between SIO sources and sources not under SIO/UCSD control. We would welcome the opportunity to work together with the Critical Coastal Area (CCA) committee to help address this issue.

3. SEDIMENTS

We recommend coupling the sediment monitoring program with an infaunal marine life monitoring program. The samples for both programs should be collected simultaneously so that sediment, organic, and contaminant compositions of the sediment are known as well as the composition of the infaunal (burrowing) community for all samples. Contaminant and organic composition is closely linked to grain size composition of the sediments which in turn define the habitat for the infaunal community.

A preliminary study should be conducted to identify adequate sediment sampling sites. This is necessary to ensure that a range of sediment composition and infaunal habitats are adequately covered by the sampling program and for the identification of adequate controls outside of the ASBS. The preliminary study should invoke a spatially explicit depth-stratified random sampling scheme to facilitate spatial statistical analyses.

Data from the eventual monitoring program should be analyzed using non-parametric multivariate analyses to better reveal relationships and spatial patterns among sediment composition, contamination, organic content, and infaunal community composition.

Finally we recommend the comparison of concentrations of sediment contaminants to concentrations throughout the entire Southern California Bight to determine relative contamination of ASBS sediments to the range of sediments over the scale of the Bight. This is typical of most municipal discharge monitoring programs and would be a useful gauge of relative contamination within the ASBS.

4. MARINE LIFE SURVEY

The focus of the marine life survey should be (1) the spatio-temporal dynamics of the infaunal and epifaunal communities of the nearshore and surfzone soft-bottom habitats off Scripps and nearby control sites (sites identified as part of the pilot study described in the Sediments section), and (2) the development of a time series monitoring program of the intertidal hard-bottom habitats of the pier pilings and dyke rock. Monitoring mobile megabenthos such as fish would not be useful over a small-scale such as the ASBS since the ambits of these animals are much larger than the ASBS. The marine life survey should be designed in such a manner as to maximize statistical power. This means that acceptable *a priori* effect sizes must be chosen during the design phase of the study.

The call for the development of a time series monitoring program for the ASBS is not new. Kobayashi in an earlier report on the ASBS (1980) pointed out the need for the development of a time-series monitoring program of the marine life in the ASBS. Besides soft bottom communities, he included the kelp bed and rocky boulder-reef habitat located within the ASBS immediately south of the Scripps ASBS. However, inclusion of the kelp and other hard-bottom subtidal communities in a monitoring program of the Scripps ASBS is not necessary because these habitats are located at least 2 km distant from the Scripps ASBS and are likely affected more by sources south of the Scripps' discharges such as those at the foot of Avenida de la Playa and the Devil's Slide area.

At a bare minimum, the parameters included for study as part of the marine life survey should include species richness, evenness, diversity, dominance, and the Benthic Response Index (BRI). Taxa included in the soft-bottom infaunal and epifaunal programs would be limited to invertebrates, while the hard-bottom monitoring should include invertebrates and algae.

Work previously conducted off Scripps provides data that would serve as baselines for comparisons with future time series work. Baselines for soft-bottom communities off Scripps are available from data collected by Fager in the 60's and by Davis and VanBlaricom in the 70's. Their study sites can be re-occupied as part of the development of new time series. Intertidal algal data are available from work done by Gunnill in the late 70's and early 80's.

5. BIOACCUMULATION

The proposed bioaccumulation study using *Emerita* spp. and *Mytilus* spp., in particular, is a good idea and might be useful to determine the spatial distribution of metal contamination in the ASBS relative to nearby areas. We have recently conducted pilot studies off Pt. Loma using *Mytilus californianus* that have proven useful for determining areas impacted by the plume emanating from San Diego Bay. The tracers we used included heavy metals, organics, and PCB's.

We suggest that careful consideration in the choice of study sites and data interpretation. We recommend a brief pilot study to determine the spatial extent and patch structure of *Emerita*. We also suggest an alternative organism to *Emerita* that is likely to be more homogeneously distributed throughout the ASBS and adjacent sandy beaches, the bean clam *Donax gouldi*. A pilot study is needed to determine that the species chosen for the bioaccumulation study have adequate spatial coverage for this particular application. If they are not distributed far enough outside the ASBS, then adequate controls will not be available rendering data interpretation impossible. Juvenile mussels can be outplanted outside the surfzone on specially constructed modules that can be situated as part of a spatial monitoring grid. It would not be possible to deploy these modules in the surf zone because they would be dislodged by the surf. The only hard substrate already available in

the ASBS is Dyke Rock well to the north of the discharges and the pier. These locations are not useful within a spatial assessment scheme but would be useful for time series.

Uptake of contaminants can occur as quickly as six weeks for mussels, therefore, mussels should be deployed at least seasonally and left out for ~2 months. Contaminant turnover rates for Emerita and Donax are not known, meaning that interpretation of these data will be more problematic unless a pilot study of contaminant turnover rates is conducted beforehand.

6. MODELING DILUTION AND TRANSPORT

Compared to discharges from outfall pipes into deeper receiving waters, the transport and fate of discharges to beaches are much more complex to predict due to the effects of surfzone processes. Exchange across the surfzone is difficult to quantify and highly dependent upon physical factors such as wave height, wave direction, surfzone alongshore current, magnitude and size of rip current cells, alongshore wave height gradients, local bathymetry, etc. All of these affect the dilution of surfzone discharges, their transport within the surfzone, as well as their fate at the surfzone-nearshore boundary. They are also highly variable in general, and especially so at Scripps beach which is affected by Scripps Canyon to the north and La Jolla Canyon to the south. These processes have been studied at SIO since the 1940's, when Sverdrup and Munk were investigating wave predictions for Navy amphibious vessels, and are still at the cutting edge of several large federally funded research projects at SIO.

We recommend that in addition to a limited study to determine effluent dilution, attention be given to characterizing the physical environment of the ASBS receiving waters. Extending regional oceanographic monitoring such as SDCOOS high-frequency radar and/or moored current profilers to this area would be the best long-term monitoring solution for understanding the direction, magnitude, and variability of local currents. This would entail initial investment in instruments as well as ongoing support for data processing and analysis. However, it would provide real-time data that could be used in conjunction with data collected on discharges, benthic sampling, bacterial sampling, etc., to help interpret the results of other facets of the monitoring program. The data would provide information on predominant current patterns before and during sampling periods, seasonal variability, and rates of transport and flux through the ASBS. Compared to spot sampling on a grid, or modeling largely unknown processes based on limited data, time series data is a significantly better investment of resources for understanding physical processes and their effect on transport of effluent within the ASBS. Current data would also be useful in interpreting results from intensive bacterial sampling (as outlined in previous section) to help determine the flow patterns and potential sources during the sampling period. The long term record would be useful in interpreting conditions affecting benthic and marine life that are surveyed as part of the monitoring program. Current data will not solve the problem of surfzone exchange, but it will fill one important gap in the transport puzzle which would not otherwise be covered by routine monitoring or long-term research projects.

From: Dominic Gregorio
To: John Phillips
Date: 10/26/04 2:56PM
Subject: Scripps Permit

John
Here are my comments on the draft permit. Paul did a very good job of putting the permit together and I therefore have very few comments (see attached word doc). My specific comments relate to the total suspended solids limit (see the forwarded message from my co-worker Steve Saiz), providing a reference for the sediment toxicity amphipod test, removing the effluent limits in the tables in the MRP, and the effluent and receiving water bacterial monitoring. The main thing that I think needs to be included is a reference to the filter backwash since that is a worst case situation, when a days worth of sediment, plankton, and possibly bacteria are released in a short time on the beach. Also, regarding the receiving water bacteria monitoring, I consulted with Linda O'Connell, our beach microbiologist.

We are planning a workshop to be held in January in San Diego for ASBS dischargers throughout the state. I am hoping that you will be available as a speaker- I am tentatively pencilling you in as a speaker for 15 minutes to give the regional board perspective from your experience with the Scripps exception and permit process, if that is OK?

Sincerely,

Dominic Gregorio, Environmental Scientist
Division of Water Quality
State Water Resources Control Board
916-341-5488
gregd@swrcb.ca.gov

CC: Gerald Bowes; Linda O'Connell; Richter, Paul; Steve Saiz

I suggest removing the quote from the Ocean Plan relative to suspended solids and instead requiring the 60 and 120 mg/L standards as Monthly Average and Maximum at any time, respectively. The Table A of the Ocean Plan is really designed for POTWs and therefore refers to "influent stream." This is obviously not relevant to SIO, unless we consider the ocean water as an influent stream. The 60 mg/L limit is a monthly average, and the 120 mg/L maximum level was calculated based on a log normal distribution and applying the USEPA TSD defaults. See the amended Table 4 below.

Table 4. Table A Effluent Limitations

Constituent	Units	Monthly Average (30 day)	Weekly Average (7 day)	Maximum at any time
Oil & grease	mg/L	25	40	75
Suspended solids	mg/L	60 ~~See below +~~		**120**
Settleable solids	mL/L	1.0	1.5	3.0
Turbidity	NTU	75	100	225
PH	pH units	Within limits of 6.0 - 9.0 at all times.		

~~+ The 2001 Ocean Plan requires the following:~~
~~Suspended Solids: Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L.~~

I suggest removing the third column on Tables 1-4 in the MRP. The effluent limits are already given in the permit and placing only the 6-Month Median (as in Table 1) or the Monthly Average (as in Tables 2-4) may cause confusion, possibly leading the discharger to believe that only those limits apply to the monitoring data. All of the effluent limits apply (instantaneous maximum, daily maximum, 6-month median, monthly average, and weekly average) regardless of how these tables in the MRP are presented. An amended Table 4 is provided below as an example. Also, specifically for Table 4, I suggest requiring that the samples from Outfall 004b be collected during the filter backwash cycle.

Table 4. Monitoring Requirements for Table A Effluent Limitations.

Constituent	Units	~~Monthly Average (30 day)~~	Sample Type	Sample Frequency	Reporting Frequency
oil & grease	mg/L	~~25~~	grab	2/year**	Semi-annual
Suspended solids	mg/L	~~See below +~~	grab	2/year**	Semi-annual
settleable solids	mL/L	~~1.0~~	grab	2/year**	Semi-annual

Constituent	Units	~~Monthly Average (30 day)~~	Sample Type	Sample Frequency	Reporting Frequency
Turbidity	NTU	~~75~~	grab	2/year**	Semi-annual
pH	pH units	~~Within limits of 6.0 9.0 at all times.~~	grab	2/year**	Semi-annual

** The 2/year monitoring frequency is May-September (dry weather) and October—April (wet weather). The sample taken during the October—April monitoring period must be taken during a storm water discharge. Samples shall be collected from Outfall 004b during the filter backwash discharge.

~~+ The 2001 Ocean Plan requires the following:~~
~~Suspended Solids: Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L.~~

I suggest that for bacteria samples that they be collected from Outfall 004b during the filter backwash cycle, which is the worst case situation. See changes below.

2. Bacteria Monitoring

   Annually, the discharges from Outfall 001 shall be sampled and analyzed once during dry weather discharge and once during a storm water discharge for fecal coliform, total coliform organisms, and enterococcus.

   Annually, the discharges from Outfall 002, 003, 004a and 004b shall be combined as a flow weighted composite and shall be sampled and analyzed once during dry weather discharge and once during a storm water discharge for fecal coliform, total coliform organisms, and enterococcus. The sample from Outfall 004b shall be collected during the sand filter backwash.

   When in use, Outfall 003, shall be sampled and analyzed monthly for fecal coliform, total coliform organisms, and enterococcus.

For sediment monitoring, I suggest giving the specific reference for the amphipod acute toxicity test. Also, for bacteria sampling in receiving water, I believe that two sample locations in the surf zone (five times per month) and two sample locations in the nearshore waters (once per month) are adequate in terms of complying with the Ocean Plan. Also, Samples should be collected at the same time as the filter backwash cycle (at 004b). See the suggested changes below:

RECEIVING WATER, SEDIMENT, AND OCEAN PLAN BACTERIAL MONITORING

1. Receiving Water Monitoring, semi-annual reporting
Receiving water monitoring shall be conducted at a location to be determined by the Regional Board. The Receiving Water shall be monitored for the applicable constituents listed in Tables 1 through 4 above. The sampling must be conducted once during dry weather and once during a storm water discharge. The sampling during a storm water discharge event must occur either during the storm water discharge or after the storm has passed and when SIO can safely collect a receiving water sample that is representative of storm water discharge conditions.

2. Sediment Monitoring, semi-annual reporting
Sediment monitoring shall be conducted at a location to be determined by this Regional Board. The sediment shall be monitored for the applicable constituents listed in Tables 1 through 4 above and shall be analyzed as a solid waste and reported as mg/kg (dry-weight). The sampling must be conducted once during dry weather and once during a storm water discharge. The sampling during a storm water discharge event must occur either during the storm water discharge or after the storm has passed and when SIO can safely collect a sediment sample. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. The general method used will be as follows: USEPA (United States Environmental Protection Agency). 1994. Methods for assessing the toxicity of sediment-associated contaminants with estuarine and marine amphipods. EPA 600-R94-025. U. S. Environmental Protection Agency Office of Research and Development. Washington DC. Any slight modifications of this method may be approved as necessary by the staff of the Regional Board in consultation with the Division of Water Quality of the State Board.

3. Ocean Plan bacterial water quality objectives – *Surf Zone* and *Nearshore* Monitoring, quarterly reporting.

Surf zone monitoring is intended to assess bacteriological conditions in areas used for bodycontact activities (e.g., swimming); and to assess aesthetic conditions for general recreational uses (e.g., picnicking).

All *surf zone stations* shall be monitored as follows:

a. Grab samples shall be collected and analyzed for total and fecal coliforms, and enterococcus at a minimum frequency of once per week throughout the year with at least five samples collected within any 30-day period. Samples shall be collected contemporaneously with filter backwash discharge from Outfall 004b.

b. Samples shall be collected in accordance with "Standard Operating Procedures for the Collection of Water Samples for Bacterial Analysis from Ocean and Bay Receiving Waters" developed by the County of San Diego Department of Environmental Health and incorporated herein by reference.

c. At the same time samples are collected from *surf zone stations*, the following information shall be recorded: observation of wind (direction and speed), weather (e.g., cloudy, sunny, or rainy), current (e.g., direction), and tidal conditions; observations of water color, discoloration, oil and grease, turbidity, odor, and materials of sewage, storm water, or seawater system origin in the water or on the beach; and water temperature (°C).

Nearshore monitoring is intended to assess bacteriological conditions in areas used for bodycontact activities (e.g. scuba diving) and where shellfish and/or kelp may be harvested; and to assess aesthetic conditions for general boating and recreational uses.

All *nearshore stations* shall be monitored as follows:

d. Grab samples shall be collected and analyzed for total and fecal coliforms, and enterococcus at a minimum frequency of once per month throughout the year. Samples shall be collected contemporaneously with filter backwash discharge from Outfall 004b.

e. At the same time samples are collected from *nearshore stations*, the following information shall be recorded: observation of wind (direction and speed), weather (e.g., cloudy, sunny, or rainy), current (e.g., direction), and tidal conditions; observations of water color, discoloration, oil and grease, turbidity, odor, and materials of sewage, storm water, or seawater system origin in the water or on the beach; and water temperature (°C).

Monitoring Station Locations

Station Description

Surf Zone Stations

S1 Surf zone, 1,000 feet south of the SIO Pier.

~~S2 Surf zone, 500 feet south of the SIO Pier.~~

~~S3 Surf zone, at Outfall 001 (just north of SIO Pier).~~

~~S4 Surf zone, 500 feet north of the SIO Pier.~~

~~S5~~ S2 Surf zone, 1,000 feet north of the SIO Pier.

Nearshore Stations

N1 Opposite S1, at a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, MLLW.

~~N2 Opposite S2, at a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, MLLW.~~

~~N3 Opposite S3, at a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, MLLW.~~

~~N4 Opposite S4, at a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, MLLW.~~

~~N5~~ N2 Opposite ~~S5~~S2, at a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, MLLW.

From: Steve Saiz
To: Dominic Gregorio
Date: 10/26/04 2:35PM
Subject: Max Daily TSS

Dominic,

I used my LimCalc computer program to find out what an appropriate daily maximum TSS effluent limitation would be if the 30-day average effluent limit is 60 mg/L.

First, I obtained an average monthly limit assuming a WQ standard of 1 mg/L and using the USEPA TSD defaults (Box 5-1) for calculating a WQ-based effluent limitation:

LimCalc 1.0 ran on Oct 26, 2004 14:11:22

__Inputs__
Water Quality Objective : 1
Background Seawater Conc : 0
Minimum Initial Dilution : 0
Historical CV : 0.6
Samples per Month : 4
Percentile Basis - LTA : 99
Percentile Basis - AML : 95
Percentile Basis - MDL : 99

__Outputs__
Wasteload Allocation : 1
Long Term Average : 0.52737956
Average Monthly Limitation : 0.81868179
Maximum Daily Limitation : 1.6428182
Ratio MDL/AML : 2.00666268

This says that an average monthly limit is 0.8187 times the WQ criterion. Next we calculate the corresponding TSS water quality criterion = 60 mg/L *(1/0.8187) = 73.287 mg/L. Now rerun LimCalc with the derived WQ criterion:

LimCalc 1.0 ran on Oct 26, 2004 14:20:42

__Inputs__
Water Quality Objective : 73.287
Background Seawater Conc : 0
Minimum Initial Dilution : 0
Historical CV : 0.6
Samples per Month : 4
Percentile Basis - LTA : 99
Percentile Basis - AML : 95
Percentile Basis - MDL : 99

__Outputs__
Wasteload Allocation : 73.287
Long Term Average : 38.6500658
Average Monthly Limitation : 59.9987325
Maximum Daily Limitation : 120.397217
Ratio MDL/AML : 2.00666268

In conclusion, if the 30-day average TSS effluent limitation is 60 mg/L, then an appropriate Daily Maximum

TSS effluent limitation would be 120 mg/L.

--Steve Saiz

Cal/EPA, State Water Resources Control Board
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From: Dominic Gregorio
To: John Phillips; Richter, Paul
Date: 10/26/04 3:33PM
Subject: Fwd: Background info on Suspended Solids in the OP

More information on TSS in the Ocean Plan, historical background.

From: Steve Saiz
To: Dominic Gregorio
Date: 10/26/04 3:10PM
Subject: Background info on Suspended Solids in the OP

FYI

--Steve Saiz

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ATTACHMENT

FINAL
ENVIRONMENTAL IMPACT REPORT

AMENDMENT OF THE
WATER QUALITY CONTROL PLAN,
OCEAN WATERS OF CALIFORNIA

VOLUME I

State Water Resources Control Board
Sacramento, November 1983

CHAPTER II

Suspended Solids

Background

The regulation of suspended solids in waste treatment plant effluent is one of the most controversial and economically significant aspects of the Ocean Plan. This regulation, perhaps more than any other, determines the level of sewage treatment required of coastal sanitation districts.

The current Plan requires that treatment plants remove 75% of suspended solids from the influent stream before discharging wastes to the ocean. This translates to a level of treatment beyond "primary", but short of full "secondary". Treatment plants typically achieve this level of solids removal by either providing secondary treatment for a portion of the waste stream, and mixing this higher quality effluent with waste which has received primary treatment, or by using primary treatment with chemical addition.

The draft EIR discussed the perceived need for a modification to the current limitation. Smaller dischargers with relatively dilute wastes have experienced difficulties in meeting the 75% removal requirement, although they may be operating satisfactorily. Staff recommended in the draft EIR that the 75% removal requirement apply where the influent stream contains more than 240 mg/l of suspended solids (this will include the larger dischargers), and that for more dilute wastes a limit of 60 mg/l apply to the effluent. Under this proposal, required solids removal would be, for example: For an influent of 220 mg/l, about 73%; for an influent of 200 mg/l, 70%; and for an influent of 180 mg/l, about 67%. While the proposal gives slight relief to some smaller dischargers, it would still require an "advanced primary" level of treatment to meet these removal efficiencies.

The proposed Plan would also authorize Regional Boards to adjust the lower limit (60 mg/l). If this proposal is adopted, coastal Regional Boards can expect applications from dischargers purporting to show that a higher limit than 60 mg/l can be discharged without adverse effects on beneficial uses.

Another feature of the proposal is that it would dispose of the problem of marine aquaria and aquaculture operations which use flow-through sea water. In the past such operations have been granted individual exceptions from the suspended solids removal requirement.

Comments on Draft EIR

Nearly all comments received on this issue came from dischargers, particularly from sanitation districts. The exception is one individual commenter who provided a detailed critique of the dischargers' position.

The general contentions of the dischargers are that (1) the 60 mg/l "floor" of the proposed limitation is too conservative, as the marine environment can absorb far greater amounts of solids without damage, and (2) this limitation (and all effluent limitations) should be based on mass emission and environmental effects, i.e. there is no justification for the same effluent standards for very large and very small dischargers.

With EPA in the process of considering, and possibly approving, waivers from secondary treatment requirements (section 301(h) waivers) for most of California's major coastal dischargers, the federal requirement for municipal sewage treatment will call for meeting State water quality standards with a minimum of primary treatment. In this case the Ocean Plan's Suspended Solids limitation, with its requirement for advanced primary treatment, will become controlling on the dischargers. (In the past, EPA's requirement for secondary treatment has been the more restrictive.) With this in mind, the coastal dischargers argued for a less restrictive Suspended Solids limitation in the Plan. The City of San Diego made the most optimistic proposal : 60% removal or 115mg/l effluent concentration, whichever is higher. This proposal is consistent with their statement that they "simply do not believe that treatment beyond the primary level is needed." They cited EPA's waiver regulations to support this view.

Other dischargers originally (see draft EIR) made various proposals combining a percentage removal with a lower enforcement limit (typical was San Francisco's 65% removal or 80 mg/l), but most of these commenters are in the hearing record as supporting the proposal made on their behalf by the organization "California Ocean Dischargers" (COD). This proposal would regulate dischargers on the basis of expected sedimentation pattern in the vicinity of their outfall. Discharges with expected steady-state sediment accumulation in excess of 50 g/m^2 (0.01 lb/ft^2) would be regulated by the limitation proposed in the draft EIR (75% removal or 60 mg/l). Discharges with lesser expected sediment accumulation would be regulated by the relationship of mass emission to sediment accumulation, assumed to be controlled by the plume behavior of the discharge. The limitation would then be set at the mass emission rate which would yield a sediment accumulation of 50 g/m^2, subject to a proposed 120 mg/l maximum concentration.

COD agreed with the provision for site-specific adjustments by Regional Boards, but felt the wording should require the RWQCB's to adopt site-specific criteria when a discharger can demonstrate an absence of adverse effects.

COD, along with individual dischargers, claimed that the suspended solids limitation as it exists and as proposed is "a deterrent to the practice of water reclamation", in that reusable water is required for dilution of the waste stream, in order to meet the concentration limit.

In a critique of COD's comments, an individual commenter calls their proposal to adopt a standard based upon the accumulation of sediments of sewage [illegible] unacceptable. This commenter proposes (but does not support) a maximum effluent limit of 60 mg/l for all dischargers. This commenter agrees with COD that the current regulation allows large dischargers to discharge a greater mass of solids than smaller treatment plants. But where COD sees this as justification for permitting greater discharges from small agencies, this commenter draws the opposite conclusion.

Response to Comments

The State Board has consistently held, since 1972, that municipal [illegible] discharges should be treated beyond the primary level. Ocean water [illegible] in California has not improved to the point where the State Board can be justified

in abandoning this policy. In particular, the City of San Diego has not provided evidence of improving water quality to support their contention. In fact the hearing record contains more public concern about inadequate sewage treatment from the San Diego area than from any other location.

Although dischargers have argued that the proposed 60 mg/l effluent limitation is too conservative, it is noted that this represents a loosening of the current solids removal requirements. Further, a provision has been proposed to permit a higher limit where conditions warrant. The State Board has a responsibility to set limitations which will protect beneficial uses. Until convincing evidence shows that less stringent limits will give such protection, a conservative approach is in order.

The argument that dischargers should be regulated by mass emission limits, rather than by concentration or percent removal, has great theoretical merit, as pointed out in the draft EIR (p 30). The proposed amendment permits Regional Boards to consider mass emissions in making any adjustments to the limitation.

COD's recommendation for the regulation of smaller discharges is interesting, but its acceptance would involve a marked change of direction by the Board. The requirement for 75% (or any percentage) removal would be dropped. This standard has served as a performance standard, requiring proper operation of the treatment plant. In its place would be a maximum limit of 120 mg/l, or less in some cases. Such a limit would probably require no more than primary treatment by any small discharger, and considerably less by many.

The dischargers in question are those whose current treatment results in sediment accumulation of less than 50 g/m^2. COD's proposal that all such dischargers be allowed to slip to a level of treatment resulting in increased sewage sediment accumulation is not based on site-specificity, nor on demonstrated economic need.

While it may be the case that certain dischargers could discharge suspended solids concentrations in excess of those recommended in the draft EIR without causing measurable environmental degradation or violating other Ocean Plan limitations, a blanket determination to that effect by the State Board, covering all smaller dischargers, cannot be justified. Further, COD's recommendation does not fully consider the well-established connection between sewage solids and toxic materials. A determination of whether sediment deposition of 50 g/m^2 will cause environmental degradation depends in large part on the composition and toxicity of such sediment, which will vary with individual dischargers.

It is recommended that such a major retreat in sewage treatment as proposed by COD not be adopted. The provision for Regional Board adjustments proposed in the draft EIR gives dischargers the opportunity to apply for adjustments where they are warranted. COD's proposal will remain a valuable input in such applications.

COD and others may be correct in their contention that in some cases the concentration limitations on suspended solids (and on toxics) may make the reclamation of reuseable secondary effluent difficult. However, permitting concentrated wastewater discharges may result in unacceptable local toxic

conditions near the discharge, a concern repeatedly voiced by the Department of Fish and Game. In some cases, however, the need for reuse of water may make such reclamation desirable. It is therefore proposed that a reference to water reclamation be added to the factors Regional Boards may consider in making local adjustments to the limitation.

Resolution

Footnote 15 to the proposed Ocean Plan is deleted, and Table A (Chapter IV s modified to read (in part):

"Suspended Solids: see below*

*Suspended Solids: Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/l.

Regional Boards may, with concurrence of the State Board and the Environmental Protection Agency, adjust the lower concentration limit (the 60 mg/l above) to suit the environmental and effluent characteristics of the discharge As a further consideration in making such adjustment, Regional Boards should evaluate effects on existing and potential water* reclamation projects

If the lower concentration limit is adjusted by the Regional Board the discharger shall remove [illegible] suspended solids from the influent stream at any time the influent concentration exceeds four times such adjusted effluent limit.

This change

1 Retains the performance standard of 75% removal

2. Gives some relief to small dischargers of relatively dilute waste.

3 Obviates the necessity for granting individual exceptions to flow-through sea water systems.

4 Provides for site-specific adjustments by Regional Boards where warranted, with State Board and EPA approval.

5 Makes provision for consideration of water reclamation needs

State Water Resources Control Board

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Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at http://www.swrcb.ca.gov.

TO: Howard Kolb
Central Coast Regional Water Quality
Control Board

FROM: Frank Palmer, Chief
Ocean Standards Unit
DIVISION OF WATER QUALITY

DATE: March 19, 2003

SUBJECT: REGULATION OF SUSPENDED SOLIDS IN THE OCEAN PLAN

This memorandum is in response to your request for clarification on the regulation of suspended solids in the 2001 California Ocean Plan.

Table A of the 1972 California Ocean Plan originally set Effluent Quality Requirements for suspended solids at 50 mg/L and 75 mg/L. These concentrations were not to be exceeded in wastes discharged to the ocean 50 percent and 10 percent of the time, respectively.

In 1978, Table A was amended. The suspended solids limiting concentration was changed to a fixed 75 percent removal requirement. The Ocean Plan stated that "Table A limitations apply only to publicly owned treatment works and industrial discharges for which Effluent Guideline Limitations have not been established pursuant to Sections 301, 302, 304, or 306 of the Federal Water Pollution Control Act of 1972." Footnote 10 was added to Table B of the 1978 Ocean Plan to underscore the fact that Table B constituents were to be applied as water quality objectives, in contrast to the technology-based effluent requirements in Table A.

The suspended solids regulation in Table A of the current 2001 California Ocean Plan was adopted in 1983. The current effluent limitation is as follows: "Dischargers shall, as a 30-day average, remove 75 percent of suspended solids from the influent stream before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L." In addition, language was added to allow a concentration-based limitation higher than 60 mg/L in order to conserve reusable water. SWRCB outlined the rationale for the suspended solids amendments in pp. 6-9 of the 1983 *Final Environmental Impact Report, Amendment of the Water Quality Control Plan for Ocean Waters of California* (Attachment 1).

In brief, SWRCB rationale emphasized a belief that municipal ocean discharges should be treated beyond the primary treatment level. By regulating suspended solids using both a percent removal element and a concentration-based element, the current suspended solids effluent limitation language would: 1) retain the 75 percent removal performance standard, 2) give relief to small dischargers with dilute wastes, 3) obviate the need for granting individual exceptions for flow-through seawater systems, 4) provide site specific adjustments where necessary, and 5) make provisions for water reclamation.

All Table A effluent limitations, including those for suspended solids, are technology-based effluent limitations and are intended to be achieved in undiluted effluents. In no sense are they to be interpreted as water quality objectives to protect beneficial uses (as in Table B of the Ocean Plan).

Please note that USEPA has promulgated a minimum level of suspended solids effluent quality attainable by secondary treatment in 40 CFR 133.102. This regulation is more stringent than the California Ocean Plan: the 30-d average shall not exceed 30 mg/L and shall not be less than 85 percent removal. Most municipal wastewater treatment facilities are now required in NPDES permits to meet these secondary treatment standards.

In light of the above federal Regulation, SWRCB staff intend to pursue amending the suspended solids effluent limitation in Table A of the Ocean Plan during a future Triennial Review of the Ocean Plan.

If you have any questions regarding the above, please call Steve Saiz of the Ocean Standards Unit at (916) 341-5582.

Attachment